*Clinical Psychology and Psychotherapy*, Vol. 3 (3), 153–168 (1996)

# *Post-Traumatic Stress Disorder: An Overview*

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**This introductory paper for the Special Series on Post-traumatic Stress Disorder (PTSD) provides an overview of the psychological literature on chronic PTSD. We describe the symptoms of PTSD, the common associated features of the disorder, and common themes in the clinical presentation of traumatized individuals. Epidemiological studies are reviewed that reveal the widespread occurrence of potentially traumatizing events and the prevalence of PTSD among traumatized populations. We next provide an overview of psychological assessment procedures. This is followed by a description of three psychological theories of PTSD that have received a good deal of attention along with their implications for treatment. Two of the most widely applied treatments of PTSD are next reviewed in some detail: direct therapeutic exposure therapy and stress management approaches. Finally, we introduce the six papers that follow in the series in the context of a brief discussion of directions for future research in the field of chronic PTSD.**

## INTRODUCTION

The effects of exposure to extreme stressors or trauma are profound and cut across all areas of functioning—biological (e.g. Friedman *et al.*, 1995), psychological (e.g. Horowitz, 1986; Herman, 1992a), and social (e.g. Gist and Lubin, 1989; Kulka *et al.*, 1990). By definition, traumas such as interpersonal violence, sexual assault, life-threat, bodily injury, and extreme loss, confront the individual or group with demands that overwhelm their coping capacity, and anyone exposed to trauma through direct experience or observation is subject to predictable disruptions in functioning. The immediate effects of trauma are varied but can be described by some combination of the following: feelings of extreme vulnerability, helplessness or despair, intense, panic-level arousal and negative emotion, a sense of being stunned, numb, and depleted, and an altered consciousness or awareness that entails a sense of derealization and depersonalization (otherwise referred to as dissocation).

Individuals exposed to trauma have an immediate, often severe reaction, yet the majority of exposed individuals can integrate the event into their views of themselves and the world (e.g. Horowitz, 1986; Janoff-Bulman, 1989; McCann and Pearlman, 1990) and recover within a relatively short period of time (e.g. Rothbaum *et al.*, 1992). Nevertheless, those trauma survivors that successfully recover are changed in lasting ways by their experiences (see Herman, 1992a). Some non-treatment-seeking well-adjusted trauma survivors have lingering, lower intensity symptoms that they accept as part of the legacy of the event (e.g. Wolfe *et al.*, 1993). Typically, the process of recovering from traumatic events is not linear in that for some there are periods of very effective coping and functioning followed by intense post-traumatic symptoms, often requiring treatment.

Some individuals exposed to extreme trauma continue to have symptoms that mirror their immediate reaction to the traumatic event and develop an acute stress disorder or reaction that greatly interferes with their ability to return to their normal

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CCC 1063–3995/96/030153–16

family, social and work routines (e.g. Koopman *et al.*, 1995). Within a month or so, such acute reactions usually remit, and the person returns to their pre-trauma routine having restored a state of homeostasis. For others, this acute reaction fails to remit and symptoms persist becoming a chronic, often debilitating Post-traumatic Stress Disorder (PTSD).

The present paper is an overview of the psychological literature on chronic PTSD. Our intention is to provide the reader with a survey of the salient issues in the epidemiology, assessment and treatment of chronic PTSD and to highlight issues in this area of clinical research. The review is not exhaustive and we add many references throughout so the reader, if interested, can search out the original literature. We also include information that will assist the reader to appreciate the studies that make up this special series on PTSD. Finally, we take this opportunity to set forth what we feel to be several important areas for future research.

## THE SYMPTOMS OF POST-TRAUMATIC STRESS DISORDER

Recognition of the unique effects of trauma on human behaviour is not new in the fields of applied psychology and psychiatry (e.g. Freud *et al.*, 1921; Lindemann, 1944; Grinker and Spiegel, 1945). The modern study of the chronic sequelae of trauma is directly informed by observations made by psychiatrists and psychologists who treated veterans of World War I and II (e.g. Grinker and Spiegel, 1945; Kardiner and Spiegel, 1947; Dollard and Miller, 1950). These clinicians observed that veterans who were exposed to horrible war-related violence and degradation continued to experience intrusions of painful memories of the events they witnessed. They also observed that veterans had intense emotional and physiological reactions when reminded of their trauma, disrupted sleep and extreme startle reactions (e.g. Grinker and Spiegel, 1945). Very early on, psychologists observed that if they urged patients to tell the story of their trauma, this led to symptom reduction (e.g. Freud *et al.*, 1921; Dollard and Miller, 1950).

Although there were these early observations of an invariant pattern of chronic reactions to war-zone trauma, the characteristic symptoms of PTSD have been formally codified in the diagnostic nosology only since 1980 in the United States (US). Although there continues to be a debate about what constitutes the necessary and sufficient definitional criteria for PTSD (e.g. Davidson and Foa, 1991), at present, a core set of 17 possible symptoms or repertoires of characteristic responses have been identified. The current nosology (DSM-IV; APA, 1994) sets forth a rough operational definition of what constitutes a traumatic event (Criterion A) and describes three separate classes of symptoms that make up the characteristic symptoms of chronic PTSD: re-experiencing phenomena (Criterion B), avoidance and emotional numbing symptoms (Criterion C), and hyperarousal disturbances (Criterion D; see Table 1, the ICD-10 criteria for PTSD are listed in Table 2).

The re-experiencing symptoms of PTSD (e.g. intrusive thoughts about the trauma) are the prototypical symptoms of PTSD and are the modal targets of treatment interventions (see Fairbank and Nicholson, 1987; Keane *et al.*, 1992a). Clinically, there is a relationship between avoidance behaviour and the extent to which traumatic events are re-experienced in that the more a person suppresses his/her emotional reaction upon being reminded of his/her trauma or the more he/she avoids cues that are reminiscent of the trauma, the greater the frequency and intensity of re-experiencing symptoms (e.g. Horowitz, 1986). Although different language is used to describe the procedures, a common feature of all psychological treatments of PTSD is the sustained accessing of painful trauma memories in PTSD patients and the blocking of avoidance responses so that more complete emotional-processing of trauma memories can occur (see Fairbank and Nicholson, 1987).

The three symptoms of emotional numbing (disinterest, detachment, and restricted range of affect), which entail problems in the experience and expression of emotion and in the quality of emotional connection to others, have recently been shown to be particularly important aspects of the PTSD syndrome. For instance, researchers have shown the emotional numbing symptoms to independently contribute to the prediction of who develops chronic PTSD and poor psychosocial outcome in traumatized populations (Breslau and Davis, 1992; Rothbaum *et al.*, 1992; Kilpatrick and Resnick, 1993; Foa *et al.*, 1995a). In addition, some data suggest that the emotional numbing symptoms are particularly resistant to change (e.g. Keane *et al.*, 1989). The latter finding suggests that emotional numbing symptoms require special consideration in treatment. However, to date the symptoms of emotional numbing have not received much attention in treatment outcome studies (Litz, 1992).

It is unclear what may be responsible for emotional numbing in traumatized populations.

Table 1. Diagnostic criteria for post-traumatic stress disorder according to DSM-IV (APA, 1994)

A. The person has been exposed to a traumatic event in which both of the following were present:
   (1) the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others
   (2) the person's response involved intense fear, helplessness or horror

B. The traumatic event is persistently re-experienced in one (or more) of the following ways:
   (1) recurrent and intrusive recollection of the event, including images, thoughts, or perceptions
   (2) recurrent distressing dreams of the event
   (3) acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur on awakening or when intoxicated)
   (4) intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event
   (5) physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event

C. Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by three (or more) of the following:
   (1) efforts to avoid thoughts, feelings or conversations associated with the trauma
   (2) efforts to avoid activities, places or people that arouse recollections of the trauma
   (3) inability to recall an important aspect of the trauma
   (4) markedly diminished interest or participation in significant activities
   (5) feeling of detachment or estrangement from others
   (6) restricted range of affect (e.g. unable to have loving feelings)
   (7) sense of a foreshortened future (e.g. does not expect to have a career, marriage, children or a normal lifespan)

D. Persistent symptoms of increased arousal (not present before the trauma) as indicated by two or more of the following:
   (1) difficulty falling or staying asleep
   (2) irritability or outbursts of anger
   (3) difficulty concentrating
   (4) hypervigilance
   (5) exaggerated startle response

E. Duration of the disturbance (symptoms in Criteria B, C, and D) is more than a month

F. The disturbance causes clinically significant distress or impairment in social, occupational or other important areas of functioning

Some have argued that emotional numbing symptoms emerge when more active avoidance strategies (i.e. avoiding thoughts, feelings, and situations that are reminiscent of the trauma) fail to reduce painful affect (e.g. Foa *et al.*, 1992). Alternatively, other researchers have posited emotional numbing to be a byproduct of the depletion of emotional resources that follows prolonged states of hyperarousal in trauma-exposed individuals (e.g. Litz, 1992; van der Kolk *et al.*, 1985). To date, neither global explanation has been sufficiently researched.

## EPIDEMIOLOGY OF TRAUMA AND PTSD

### *Exposure to Potentially Traumatizing Events*

Before the most recent revision of the diagnostic nosology in the US (the DSM-IV, APA, 1994), the mental health community defined trauma as an event that was 'outside the range of usual human experience' (DSM-III-R, APA, 1987, p. 250). The criteria went on to provide examples such as 'serious threat to one's physical integrity; serious threat or harm to one's children, spouse, or other close relatives and friends; sudden destruction of one's home or community; or seeing another person who has recently been or is being seriously injured or killed' (APA, 1987, p. 250). Empirical studies of the prevalence of trauma in the general population prompted a telling revision of the definition of what constitutes a traumatic event. Potentially traumatizing events in the general population are simply not statistically infrequent or unusual features of modern society.

Two studies conducted in the US, one of women (Resnick *et al.*, 1993), and one of both men and women (Norris, 1992), revealed an alarming percentage of individuals who reported at least one

Table 2. Diagnostic criteria for post-traumatic stress disorder in ICD-10 (World Health Organization, 1994)

A. The patient must have been exposed to a stressful event or situation (either short or long-lasting) of exceptionally threatening or catastrophic nature, which would be likely to cause pervasive distress in almost anyone

B. There must be persistent remembering of 'reliving' of the stressor in intrusive 'flashbacks', vivid memories or recurring dreams, or in experiencing distress when exposed to circumstances resembling or associated with the stressor

C. The patient must exhibit an actual or preferred avoidance of circumstances resembling or associated with the stressor which was not present before exposure to the stressor

D. Either of the following must be present:
   (1) Inability to recall, either partially or completely, some important aspects of the period of exposure to the stressor
   (2) persistent symptoms of increased psychological sensitivity and arousal (not present before exposure to the stressor), shown by any two of the following:
      (a) difficulty in falling or staying asleep
      (b) irritability or outbursts of anger
      (c) difficulty in concentrating
      (d) hypervigiliance
      (e) exaggerated startle response

E. Criteria B, C, and D must all be met within 6 months of the stressful event or of the end of a period of stress. (For some purposes, onset delayed more than 6 months may be included, but this should be clearly specified)

traumatic event over the life-span, 68.89% and 69%, respectively. A study of young adults enrolled in a health care organization yielded a slightly lower estimate of 39.1% (Breslau *et al.*, 1991). The lower proportion in the Breslau *et al.* (1991) study may be due to the use of general descriptors of events (e.g. 'sexual assault') rather than behaviourally anchored specific descriptors that researchers have proposed leads to more accurate endorsement rates (Resnick *et al.*, 1993). Quite shockingly, a recent questionnaire study in a large American university estimated the prevalence rate of exposure to at least one potentially traumatizing event at 84% (Vrana and Lauterbach, 1994). Another questionnaire study of the general Dutch population revealed that 25% of the population endorsed the occurrence of 'severely damaging or life-threatening experiences', a narrow definition of a potentially traumatizing event and therefore a likely underestimate of the prevalence of exposure (Vanderlinden *et al.*, 1993). Taken as a whole, these studies underscore the ubiquity of exposure to potentially traumatizing events.

Studies that have explored the incidence of exposure to specific types of potentially traumatizing events reveal similarly high frequencies of trauma. A national telephone survey in the US found that 27% of women and 16% of men reported at least one incidence of child sexual abuse (Finkelhor *et al.*, 1990). In a national survey of US women, 27% of the women surveyed reported at least one instance of sexual assault (Resnick *et al.*, 1993), and in a national community sample of Dutch women, 34% reported at least one incident of sexual assault/abuse (Draijer, 1992, cited in Green, 1994). In a national study of female American college students, 54% of participants reported some form of sexual victimization (Koss *et al.*, 1987).

Other relatively common forms of trauma include natural disasters (e.g. flood, hurricanes), technological disasters (e.g. building fires, explosions, nuclear accidents), and war-zone-related violence and degradation. For example, it is estimated that 800 million individuals worldwide have been adversely affected by natural disasters over the past two decades (deGirolamo, 1993). War-zone related traumas, although usually restricted to a limited segment of the population in certain countries (i.e. soldiers), can have a broad and pervasive impact on the general population in countries where wars take place. For example, an epidemiological survey in Sri Lanka, in an area which has been the site of civil war since 1983, found that 94% of the population had been exposed to at least one war-zone stressor (Somasundaram and Sivayokan, 1994). It is safe to say that in other war-torn regions of the world (e.g. Cambodia, the former Yugoslavia, Somalia), exposure to war-zone-related violence affects nearly all who live in the society.

### *Post-Traumatic Stress Disorder*

The prevalence of PTSD has been investigated in large scale community samples such as those described above and in studies of specific

populations that have been exposed to potentially traumatizing events. In the national study of American women described above, 17.9% of individuals exposed to a potentially traumatizing event met criteria for a lifetime diagnosis of PTSD and 6.7% were currently diagnosed with PTSD, yielding a lifetime prevalence within the entire sample of 12.3% and a current prevalence of 4.6% (Resnick *et al.*, 1993). In a sample of young adults in the US, 23.6% of individuals exposed to a potentially traumatizing event met criteria for PTSD, yielding a lifetime prevalence of 9.2% (Breslau *et al.*, 1991).

Studies investigating the prevalence of PTSD among soldiers exposed to the war-zone have yielded significant estimates of the prevalence of this disorder. The National Vietnam Veterans Readjustment Study (NVVRS), a national probability investigation of the psychosocial status of Vietnam veterans, found prevalence rates of current PTSD to be 15.2% and 8.5% for male and female theatre veterans, respectively (Kulka *et al.*, 1990).. The NVVRS found lifetime prevalence rates of 30.6% for male veterans and 26.9% for women veterans. A smaller scale study of British army veterans who had served in the Falklands War found that 22% met criteria for PTSD (O'Brien and Hughes, 1991). In the study of Sri Lanka civilians described above, 27% of those interviewed met diagnostic criteria for PTSD (Somasundaram and Sivayokan, 1994).

Those military (and civilian) personnel who administer or ensure peace, or provide humanitarian assistance in war-torn regions of the world, are also exposed to a unique set of potentially traumatizing circumstances (e.g. Lundin and Otto, 1989; Weisaeth, 1990). Recently, researchers have shown that peacekeepers tasked with protecting civilians in war-torn regions and enforcing peace in active war-zones (e.g. Bosnia, Lebanon, Somalia) are at risk for the development of PTSD (e.g. Litz, 1996).

In cross-sectional studies of victims of natural disasters that specifically evaluated PTSD, 59% of tornado victims (Madakasira and O'Brien, 1987), 32% of earthquake victims (de la Fuente, 1990), and 28% of flood victims (Green *et al.*, 1990) met diagnostic criteria for PTSD. Exposure to sexual assault appears to be associated with the highest rates of lifetime PTSD in those exposed. Of individuals in the Breslau *et al.* (1991) study who reported a sexual assault 80% met criteria for PTSD, as compared to approximately 20% of those who were exposed to other types of potentially traumatizing events.

In summary, epidemiological studies have demonstrated a very high prevalence of potentially traumatizing events in modern times. The prevalence estimate of current PTSD in the general population is between 5% and 10%, suggesting that PTSD is one of the more common psychiatric disturbances. The natural course of PTSD has yet to be studied sufficiently. Of those individuals who have been exposed to trauma, it remains unclear who develops chronic and unremitting PTSD, who initially develops PTSD but recovers, and who experiences a delayed-onset PTSD. In addition, it is unclear who is likely to seek treatment after exposure to traumatic events.

## WHAT ARE THE RISK FACTORS FOR PTSD?

Unfortunately, at present, we know very little about the qualities of the person or the specific characteristics of the trauma that lead to the development of chronic PTSD. Proper longitudinal studies have yet to be conducted (for notable exceptions, see Breslau and Davis, 1992; Rothbaum *et al.*, 1992). Cross-sectional research, case studies, and clinical observation have suggested that the more severe, long-lasting or repeated the traumatic event or events, and the earlier the trauma occurs developmentally, the greater the likelihood of lasting pathology (see Green, 1993).

Currently, there is a recognition that the development of chronic PTSD is best understood in terms of the complex interplay among features of the trauma, a number of aspects of the individual, and aspects of the recovery environment. To date, these interactions have been under-researched. Factors that appear to increase the likelihood of developing chronic PTSD are: (a) stressor characteristics, such as duration and severity of the trauma, presence of physical injury, and extent of interpersonal brutality (Foy, 1992; King *et al.*, 1995); (b) the person's learning history (Foy *et al.*, 1992), especially a history of exposure to trauma prior to the index event (see Green, 1994); (c) the individual's pre-trauma personality (e.g. their coping repertoire and resourcefulness, see Solomon *et al.*, 1988); (d) various aspects of the recovery environment (e.g. safe, respectful, validating, and comfortable outlets, that foster—not force—self-disclosure (Herman, 1992a); the availability of formal treatment for the immediate and acute effects of trauma (e.g. Foa *et al.*, 1995b); and (e) the availability and quality of social supports, including having a work routine to return to (e.g. Keane *et al.*, 1985a).

## ASSOCIATED CLINICAL FEATURES

The psychological effects of trauma often go beyond the descriptive symptomatology described above. Chronic PTSD patients often present in clinic settings with an array of additional intrapersonal and interpersonal disturbances, including: (a) formal comorbid psychiatric disorders (see below); (b) suicidal behaviours (e.g. Kilpatrick *et al.*, 1985a); (c) family and marital problems (e.g. Carroll *et al.*, 1985; Jordan *et al.*, 1992); (d) disturbances in sexual functioning and in the quality of emotional connection with significant others (see Resick *et al.*, 1981; Steketee and Foa, 1987); (e) coping deficits (Nezu and Carnevale, 1987; Solomon and Mikulincer, 1987; Solomon *et al.*, 1988); (f) somatic complaints and other comorbid physical health problems (e.g. Shalev *et al.*, 1990; Litz *et al.*, 1992a) and (g) personality changes that are induced by chronic victimization or trauma occurring early in development (e.g. deficits in self-care, affect regulation and gross distortions in perceptions of legitimacy and agency (McCann and Pearlman, 1990; Herman, 1992b; Newman *et al.*, 1995)).

Epidemiological and clinical research have shown that persons with trauma histories are at risk for the development of a variety of psychiatric disorders, not just PTSD (e.g. Links and van Reekum, 1993; Weaver and Clum, 1993). When epidemiologists identify PTSD as an index disorder, they find a high prevalence rate of additional Axis-I and Axis-II or personality disorders (e.g. Sierles *et al.*, 1983; Keane and Wolfe, 1990; Kulka *et al.*, 1990). Treatment-seeking PTSD populations have extremely high rates of comorbid disorders, most often substance abuse and depression (e.g. Kilpatrick *et al.*, 1985a; Kulka *et al.*, 1990; Orsillo *et al.*, in press). The presence of comorbid conditions in PTSD often necessitates a treatment approach designed to target trauma-related symptoms and other adjustment problems, sometimes serially, other times in parallel.

As mentioned above, traumatized individuals will seek treatment at varying points in time after their trauma, often after an extended period of effective functioning. Typically, some kind of life crisis situation precipitates the patient's desire for treatment. These crises initially may seem unrelated to the trauma (e.g. a dissolving marriage, a loss of a loved one, loss of a job, retirement). Usually, the clinician can discern that the stressful life experience that prompted treatment-seeking has an important thematic connection to a previous traumatic event(s). In other instances, clinicians discover the presence (and influence) of trauma in a patient's background well after treatment has begun. Sometimes traumatic memories are uncovered after a good therapeutic alliance has developed and after other problems are addressed in treatment, while in other instances patients are aware of their trauma histories and do not link their current problems to the trauma or are too threatened and ashamed to tell their therapists that they have been victimized. Clinicians in any setting, working with any type of population, regardless of age, or cultural background, would do well to enhance their sensitivity to inquiring about a history of trauma (see Litz and Weathers, 1994).

## PSYCHOLOGICAL ASSESSMENT

Several features of trauma and PTSD make careful and comprehensive psychological assessments particularly important (see Resnick *et al.*, 1991; Litz *et al.*, 1992b). First, since trauma can occur across the lifespan and manifest itself in a number of guises clinically, it is important to evaluate trauma across the lifespan, regardless of the patient's presenting complaint (e.g. Zaidi and Foy, 1994; Krinsley and Weathers, 1995). Second, since post-traumatic adaptations are quite varied, assigning a global diagnosis of PTSD is insufficient as the goal in the assessment of trauma-exposed individuals. At the very least, it is important for clinicians to inquire about the frequency and intensity of specific PTSD symptoms. This procedure allows for the identification of specific targets for intervention (Litz *et al.*, 1992b). Third, since there is frequent comorbidity associated with PTSD, some kind of screening for the presence of other psychiatric syndromes is necessary. Fourth, since trauma, particularly chronic, developmentally early, or interpersonally brutal trauma, can have a broad influence on how individuals regard themselves (e.g. feelings of illegitimacy, low self-esteem, sense of being damaged), regard others (e.g. with mistrust), and how they are likely to respond to common interpersonal challenges (e.g. with shame, suspicion, excessive dependency, disconnectedness, etc.), it is important to assess generalized beliefs and attitudes that are traumatogenic in nature. These trauma-related 'themes' are often targets of intervention (see Lebowitz and Newman, this volume).

Table 3 lists several recommendations of state-of-the-art instruments and procedures in the assessment of PTSD. It needs to be emphasized that this list is not exhaustive and we refer the reader to

original published reviews of assessment instruments and procedures for more thorough descriptions and details (Resnick *et al.*, 1991; Keane *et al.*, 1992b; Litz *et al.*, 1992b; Litz and Weathers, 1994; Krinsley and Weathers, 1995). We recommend the use of a psychometrically validated structured clinical interview in the evaluation of PTSD (e.g. the CAPS; Blake *et al.*, 1995) as well as the administration of a series of paper-and-pencil tests (e.g. the Mississippi Scale; Keane *et al.*, 1988) that have been shown to be useful in cross-validating the presence of PTSD symptoms and screening for the presence of comorbid psychopathology.

## THEORETICAL MODELS OF PTSD

In this section we will provide a brief overview of the principle psychological theories of the development and maintenance of PTSD and the implications of these conceptual models for treatment methods. We begin by briefly describing the behavioural model, we then describe the information-processing theories, which have integrated cognitive concepts into the behavioural formulation, and conclude with a group of theories that can be loosely defined as social-cognitive approaches to PTSD.

### *Behavioural Theory*

Mowrer's (1960) two-factor learning theory has been applied to the development of PTSD among both combat veterans (Keane *et al.*, 1985b) and rape victims (Kilpatrick *et al.*, 1985b). According to this theory, a potentially traumatizing event serves as an unconditioned stimulus that elicits great fear and anxiety. Other stimuli present at the time of the event become conditioned stimuli for fear and anxiety through classical conditioning. Because a trauma is so intense, stimulus generalization and higher order conditioning processes, over time, lead to a very wide range of stimuli being able to elicit conditioned emotional responses (CER). Quite naturally, traumatized individuals are motivated

Table 3. An outline of instruments and procedures in the assessment of PTSD

Evaluating the presence of trauma across the lifespan

(1) *The Potential Stressful Events Interview* (PSEI; Falsetti *et al.*, 1994) is a comprehensive interview that assesses exposure to high and low magnitude stressors as well as the objective and subjective characteristics of 'first or only', 'most recent' and 'worst' high magnitude events

(2) *Traumatic Stress Schedule* (Norris, 1990) is a brief screening interview designed for lay interviewers that asks about a range of traumatic events

Structured clinical interviews

(1) *Clinician Administered PTSD scale* (CAPS; Blake *et al.*, 1995) is a structured clinical inerview that evaluates the frequency and intensity of each of the 17 symptoms of PTSD. In recent studies, the CAPS has been shown to have excellent reliability and diagnostic utility (see Weathers and Litz, 1994)

(2) *Structured Clinical Interview for DSM-III-R* (SCID; Spitzer *et al.*, 1990) is a clinician administered interview that evaluates the full spectrum of affective and anxiety disorders, including PTSD

(3) *Diagnostic Interview Schedule* (DIS; Robins and Helzer, 1985) is a lay-administered structured interview that assesses diagnostic categories including PTSD

(4) *Anxiety Disorders Interview Schedule—Revised* (ADIS-R; DiNardo and Barlow, 1988). The ADIS is a clinician administered interview that assesses diagnostic criteria for all of the anxiety disorders. Although commonly used in other anxiety disorder research, it has been infrequently used in studies of PTSD

(5) *Children's PTSD Inventory* (CPTSDI; Saigh, 1989) is a clinician administered PTSD interview especially designed for children

Paper and pencil measures

(1) *The Minnesota Multiphasic Personality Inventory—2* (MMPI-2; Butcher *et al.*, 1989) is a widely used test to examine the presence of a wide range of personality functioning and psychopathology. The MMPI-2 also has an embedded PTSD scale (Keane *et al.*, 1984; see Litz *et al.*, 1991)

(2) *The Mississippi Scale for Combat-related PTSD* (Keane *et al.*, 1988) is a 35-item test that evaluates the severity of symptoms of PTSD and associated features of the disorder. A civilian version of the test is available

(3) *Symptom Checklist-90* (SCL-90; Derogatis, 1977) is a 90-item test that evaluates the severity of a wide range of psychological problems. Two PTSD scales have been developed that are embedded in the SCL-90 (Saunders *et al.*, 1990; Weathers *et al.*, 1996)

(4) *The PTSD Checklist* (PCL; Weathers *et al.*, 1993) is a 17-item measure that provides a severity rating of each of DSM-IV criteria of PTSD for the previous month

(5) *The PTSD Symptom Scale—Self Report* (PSS-SR; Foa *et al.*, 1993) is a 17-item questionnaire assessing each of the core symptoms of PTSD over the past 2 weeks

to avoid the discomfort associated with trauma-related cues as well as the cues themselves. Avoidance behaviour is highly negatively reinforced in that it reduces distress and discomfort. By avoiding trauma-related cues, the traumatized individual inadvertently thwarts the recovery process that requires the extinction of CERs. In the behavioural model, successful treatment involves repeated, prolonged exposure to the range of conditioned stimuli so that extinction can take place.

### *Information-Processing Approaches to PTSD*

A number of theorists have expanded on the behavioural theory of PTSD to incorporate constructs from information-processing theory (Chemtob *et al.*, 1988; Foa *et al.*, 1989). The information-processing theory posits that emotional experiences are encoded in memory in highly organized, semantic networks that include stimulus (e.g. sights and sounds), response (e.g. heart pounding), and meaning elements (e.g. vulnerability and dread; *cf.* Lang, 1985). The trauma network in individuals with PTSD is particularly coherent, stable and broadly generalized, leading to easy accessability and resistance to change (e.g. Litz and Keane, 1989). As such, these networks are likely to alter an individual's processing of information such that he/she is hyperaware of threatening material, interprets ambiguous cues as threatening, and therefore becomes easily aroused or anxious, resulting in avoidance behaviour.

Information-processing theorists have proposed that for emotional change to occur, PTSD patients need to fully access their network of trauma memories so that they can accommodate corrective information (*cf.* Foa and Kozak, 1986). For instance, traumatized individuals must not only be in the presence of cues related to their trauma (or imagine them), but they need to experience all the attendant emotions associated with the trauma and think about what the event and their emotional reactions mean to them in order for new corrective associations to be formed (Foa *et al.*, 1989). Resick has recently proposed that incorporation of corrective information might be more readily achieved through direct confrontation of inaccurate beliefs and perceptions using techniques such as cognitive restructuring (Resick and Schnicke, 1992).

### *Social-Cognition Models*

Other theoretical approaches highlight the role of molar social-cognitive constructs such as self-schemas and meaning structures in the development and maintenance of PTSD. Horowitz (1986) posits two opposing sets of internal processes, intrusion and denial, that are used to cope with an extreme stressor. Because an organism is motivated toward completion or closure, trauma memories continually intrude until they are integrated or accommodated into internal cognitive structures or schemas. However, these memories are accompanied by extreme arousal and distress that stimulates an opponent process of denial or avoidance. This process alleviates immediate discomfort but interferes with integration of the traumatic memory so that it remains partially present in short-term memory and intrusions frequently occur. Horowitz maintains that exposure is necessary for full integration of the memory but that it must be gradual so that the person is not overwhelmed.

Janoff-Bulman (1992) proposes a model in which trauma serves to shatter fundamental assumptions/beliefs about one's overall sense of safety, the belief that the world is benevolent, and that the self is worthy. She proposes that the fundamental goal of treatment is the rebuilding of these 'shattered assumptions' through assimilation and accommodation. McCann and Pearlman (1990), in their constructivist theory, more extensively describe the areas in which self-schemas are altered by traumatic experience. These are: safety, trust/dependency, esteem, independence, control, and intimacy, as well as causality, hope and locus of control. Treatment according to this model consists of the assessment of disrupted schemas, validation of the nature of the disruptions, and the encouragement of increased flexibility and accommodation of these schemas (McCann and Pearlman, 1990). The social-cognitive treatment approach also advocates the resolution of the traumatic memory through imagery rehearsal.

Resick and her colleagues have recently incorporated McCann and Pearlman's model into their 'cognitive-processing' model of PTSD (e.g. Resick and Schnicke, 1992). According to their model, symptomatology arises from a conflict between existing schemata and the traumatic event that creates what they refer to as cognitive 'stuck points'. For treatment, Resick and Schnicke (1992) have adapted Beck's cognitive approach to psychological disorders to the treatment of rape victims (i.e. the challenging of maladaptive beliefs through cognitive restructuring; see Beck *et al.*, 1979) and emphasize modifying the social-cognitive themes identified by McCann and Pearlman (1990, e.g. safety, trust, etc.).

## PSYCHOLOGICAL TREATMENTS FOR PTSD

At present there is no single, prescriptive treatment for PTSD. There are two reasons for this state of affairs. First, to date, there has been an insufficient number of exhaustive, well-controlled outcome studies (see Solomon *et al.*, 1992). The research that has been conducted thus far has clearly indicated that some form of sustained emotional-processing of trauma memories is essential in the treatment of PTSD. Flooding or direct therapeutic exposure therapies have received the most empirical support to date (e.g. Saigh, 1986; Keane *et al.*, 1989; Cooper and Clum, 1989; Boudewyns and Hyer, 1990; Foa *et al.*, 1991). Second, because of the diversity of clinical presentations, and the profound general effects of trauma, particularly chronic, and/or developmentally early trauma, clinicians often need to apply a set of different interventions flexibly in order to accomplish a series of short-term (e.g. crisis management) and long-term goals (enhanced coping with stress, resolution of trauma memories). Needless to say, clinicians need to individually tailor their treatment of PTSD patients based on the assessment data collected (see Litz *et al.* (1992b) for a discussion of target selection in the treatment of PTSD). Below, we discuss in some detail two approaches to the treatment of PTSD that have received the most empirical support: exposure therapy and Stress Inoculation Therapy (SIT).

### *Exposure Therapy*

The overarching goal in exposure treatment is to reduce (or extinguish) conditioned emotional responses to trauma-related cues through careful, sustained and repeated uncovering of emotional information in the trauma network (chiefly through imagery, e.g. direct therapeutic exposure; see Boudewyns and Shipley (1983), Lyons and Keane (1989), Keane *et al.* (1992a) and Jaycox and Foa (this volume), for more complete descriptions of the exposure therapy). There are a number of different interventions that can be used to accomplish the goal of extinguishing conditioned responses to trauma-related cues, including systematic desensitization, imaginal flooding, *in vivo* exposure and implosive therapy. To date, researchers have not empirically examined the differential efficacy of one direct therapeutic exposure modality over another.

There are several necessary components of effective direct therapeutic exposure treatment of PTSD, including: (a) establishing and maintaining a very good therapeutic relationship and working alliance; (b) teaching patients about the nature of traumatic memories and the need for the careful re-telling of the story of what happened to them, and giving patients accurate expectations about what occurs during and after exposure work, both in the short and long-run (e.g. typically there is an exacerbation of symptoms before the patient gets better); (c) during exposure sessions, supporting, validating and empowering patients to focus on salient, emotionally significant content; (d) watching carefully for the emergence of avoidance behaviours (e.g. distraction, talking about unrelated content) and circumventing, preventing, or re-directing them; and (e) not only providing a therapeutic context for exposure to traumatic memories, but also fostering the facilitation of new meaning and understanding about the trauma and its implications through an emerging dialogue.

Over time, with sufficient exposure to the essential aspects of trauma memories (stimulus, response, and meaning elements), PTSD patients typically experience a reduction in the intensity of their conditioned emotional reactions. The experience of a reduction of negative emotional responding that occurs from exposure treatment is a critical piece of corrective information (Foa and Kozak, 1986). Many patients feel that they will experience feelings such as sorrow, fear or shame forever, or that they will lose control or go crazy. When these assumptions are experientially challenged, patients begin to feel more comfortable talking about what happened to them and they are less compelled to avoid situations or internal states that remind them of their trauma.

### *Stress Management Strategies*

Stress management approaches to the treatment of PTSD are based on the behavioral model of trauma that posits fear to be classically conditioned to a variety of conditioned stimuli. Treatment is aimed at training the patient to develop coping skills to reduce conditioned emotional reactions to high-risk, trauma-related situations, which for chronic PTSD patients are extensive. Stress inoculation training, adapted for use with rape victims by Veronen and Kilpatrick (1983), is the most widely used stress-management treatment of PTSD. The goals of this treatment are to increase patients' awareness of conditioned stimuli (through self-monitoring) and to facilitate early cue detection so that coping

responses can be used to attenuate anxiety early in the stress response sequence.

In SIT, patients are taught a variety of coping strategies so that anxiety can be managed comprehensively (Resnick and Newton, 1992). After an initial education phase, patients are taught specific forms of stress management (e.g. relaxation techniques) that target hyperarousal symptoms. Maladaptive, stress-producing cognitions are addressed through thought-stopping and guided self-dialogue. Role-play and covert modelling are used to address the behavioural avoidance characteristics of PTSD. Overall, SIT is a coping model that assumes that conditioned emotional responses to trauma-related stimuli will always occur to some degree in traumatized individuals, and, as a result, patients need to increase their ability to manage these reactions.

Several single-case studies have demonstrated the efficacy of SIT (e.g. Veronen and Kilpatrick, 1983) but only one randomized controlled trial has been conducted using this method of treatment (Foa *et al.*, 1991). In this study, rape victims were randomly assigned to SIT, prolonged exposure, supportive counselling, or a wait list control group. The patients treated with SIT displayed superior gains at post-treatment than clients in other groups but showed some increase in symptoms at 3½ month follow-up, whereas those treated with prolonged exposure showed continual gain, resulting in less symptomatology at follow-up than those in the other groups. The authors propose that the patients may not have continued to practice the coping skills learned during SIT treatment, leading to some relapse in symptomatology. This may indicate the importance of incorporating relapse prevention into the SIT approach to the treatment of PTSD.

In some instances, SIT is used as an adjunct to exposure treatment to increase PTSD patients' access to corrective information. The basic logic behind the addition of stress management approaches to exposure treatments is that if patients cope better with daily stressors and demands, as well as with their trauma-symptoms, they will be less motivated to avoid generalized conditioned reminders of their trauma. When PTSD patients learn stress-management strategies, it also enhances their sense of personal efficacy which further facilitates the testing of trauma-related assumptions and expectations, replacing them with more flexible or complex ones. However, the efficacy of these combined treatments has yet to be empirically demonstrated.

## FUTURE DIRECTIONS

There are, needless to say, many important issues left to be explored in future research in PTSD. Two future research areas, discussed above, are the need to conduct longitudinal research to examine the natural course of responses to trauma and the need for more extensive, well-controlled psychotherapy outcome research. Since traumatized individuals appear clinically to be at risk for the development of symptoms over the lifespan, researchers need to examine empirically the qualities of the person (including developmental context), the traumatic event(s), and the environment, that are associated with steady resilience, delayed symptoms, chronic unremitting symptoms, or relapse after a period free from severe symptoms. Given that PTSD can be a chronic condition for some recurrently exposed populations, clinical outcome research will also need to examine the efficacy of treatment over long periods.

There is insufficient space to fully address these and other areas for future research in the present paper. What we have chosen to do instead in the following section is to describe some specific future research questions in the context of the six papers that make up the special series on PTSD that follow.

### *Parameters of Exposure-Based Treatments*

As discussed above, direct therapeutic exposure of traumatic cues is, in many instances, a preferred, if not essential component in the treatment of PTSD. Given this, Foy and his colleagues in their paper wonder why clinicians fail to use this treatment modality more frequently. They review data that reveal that clinicians working with Vietnam veterans with PTSD do not apply exposure therapies in the majority of instances. Foy *et al.* argue that clinicians may be showing too much caution out of excessive concern about exposure leading to decompensation, premature termination, etc. They address several issues and concerns about flooding in their paper that will assist clinicians in having greater confidence in using this effective treatment.

Because in many instances PTSD patients will often look worse before they get better, clinicians who do not have sufficient training or confidence in the exposure model may be alarmed and prematurely terminate exposure treatment. This is dangerous because it can lead to a sense of failure in both the therapist and the patient, and can inadvertently reinforce patients' beliefs about

catastrophic consequences of opening-up painful memories. Thus, it is important, as Foy *et al.* emphasize in their paper, for clinicians to be well supervised and to have considerable confidence in the exposure model. It should also be emphasized that exposure treatment can be stressful to conduct and therapists need to attend to their own need to 'debrief', 'unwind' and unburden themselves from the experience of bearing witness to horrific material and intense emotional outpouring.

Although it is true that exposure treatment is not indicated in some instances (e.g. patient cannot form a therapeutic alliance, cardiac conditions), many clinical decisions about choice of treatment are based on hunches rather than empirical precedent. This is understandable because, to date, the therapist qualities (e.g. comfort-level with intense arousal, confidence in the exposure model, the availability and utilization of emotional supports or supervision) or patient variables (e.g. expectations about the effects of treatment, appreciation of the exposure model, motivation for change, ability to image clearly, dissociative tendencies, and availability of extra-therapy supports) that influence treatment outcomes using exposure therapy for trauma have been under-researched.

Although it is safe to say that direct therapeutic exposure is useful in the treatment of PTSD, many additional questions remain about the parameters of this promising treatment. For instance, which specific exposure treatment modalities are most efficacious for which types of patients (e.g. systematic desensitization versus implosive therapy, *in vivo* versus imaginal)? Jaycox and Foa, in their paper, describe a flexible ideographic approach to treatment that allows for the modification of standard protocols so as to circumvent defensive reactions and address adverse reactions that would otherwise lead to poor outcome in PTSD cases. These PTSD researchers, based on their extensive treatment experience, provide practical suggestions for overcoming common obstacles such as rage and pervasive emotional numbing, including the use of adjunctive treatments such as cognitive therapy. Other special features of PTSD cases that may require special attention when applying any treatment include: intensive guilt about acts of commission or omission during the trauma, the uncovering of traumatic memories cued by exposure to an index memory, patient's inability to tolerate intense negative affect without self-destructive behaviour, extreme hopelessness, and motivational deficits and secondary gain due to ongoing litigation or financial compensation.

Rather than integrating other techniques with traditional therapeutic exposure to produce more flexible modes of intervention as Jaycox and Foa propose, other clinicians and researchers advocate alternative methods of exposure. In their paper, Boudewyns and Hyer present a critical review of one such method, Eye-Movement Desensitization and Reprocessing (EMDR), a new technique that has recently received a good deal of attention in the field and has been the source of much controversy. These authors review the existing body of empirical work on this technique and propose that exposure/extinction is the critical change agent in EMDR, with eye-movements appearing not to be a necessary component. They then present the results of their controlled outcome study which provides a good model of the type of outcome research that needs to be undertaken in the PTSD field. Further investigation of this form of treatment is warranted given preliminary empirical support for its efficacy and evidence that many therapists and patients seem to find it more palatable, possibly because it elicits less intense anxiety than traditional direct therapeutic exposure.

In the era of managed care it may be important to examine ways of maximizing the efficiency of exposure treatments. It may be prudent to consider treatment methods that target important preliminary issues in the first phases of therapy with PTSD patients thereby enhancing the efficacy of exposure treatment in the latter phases of therapy. We can think of two important therapeutic goals that are likely to maximize the therapeutic benefits of exposure therapy. These are psychoeducation about trauma and its effects geared toward the patient's cognitive style and level of sophistication, and training in what we might call, the language and methods of 'emotional-processing'. The latter may be particularly important in cases where emotional numbing is a prominent clinical feature (Hyer *et al.*, 1991). The overarching goal in 'emotional-processing' training is to get patients to experience and express in 'real-time' their emotional reactions to personally significant experiences, both in and outside therapy. The key components of emotional-processing are: in-the-moment recognition, acceptance, ownership, and sharing of emotional experience, both positive and negative. Greenberg and Safran (1987) describe a number of methods that can be applied in working with PTSD patients in regard to emotional-processing training (see also Linehan, 1993). Once patients clearly understand the nature of traumatic memories and become more accepting and open

about their emotional experience, they are likely to benefit more from exposure trials.

Finally, questions remain regarding the optimal length of exposure treatment. In the published outcome studies, typically a course of about 5–10 sessions of exposure treatment is recommended. Clinical experience however, suggests that when working with chronic patients, exposure work often extends well past the time period recommended in such studies. The field of traumatic stress needs a set of realistic clinical guidelines that direct clinicians in deciding when patients are 'done' with exposure treatment or when a traumatic memory has been sufficiently processed. Any decision-making criteria in this regard will need to take into account a variety of factors, including: (a) within-session extinction effects; (b) symptom change (e.g. reductions in re-experiencing); and (c) modifications in functional behaviour (e.g. changes in the frequency and intensity of avoidance of intimate interactions). In some instances, clinicians need to weave exposure work into the overall fabric of the clinical situation and thus may only periodically apply exposure over the course of treatment to target specific memories that surface. As Turner and her colleagues point out in their paper describing the treatment of incest survivors, exposure work requires a general therapeutic context that, over time, facilitates the establishment of sufficient safety and trust so that the corrective emotional experience can occur.

### *The Assessment and Treatment of Cognitive/Schematic Changes*

For those who have been traumatized early in their development or repeatedly across the lifespan, treatment may require a different approach than those currently being studied in outcome research. If an individual has been brutalized and violated at an early age, and has continued to be exposed to violence throughout their development, what should the targets for intervention be? In these cases, the traumatic life events may have not only created the symptoms of PTSD, but as described by Lebowitz and Newman in their paper, have produced changes in top-down cognitive processes (e.g. alterations in fundamental beliefs regarding the benevolence and trustworthiness of others) that have a pervasive effect on interpersonal and intrapersonal functioning. Lebowitz and Newman describe a methodology for ideographically assessing so-called themes over the course of treatment. They argue that in order for lasting change to take place, treatment needs to target thematic processes and contents. Their case study demonstrates how alterations in meaning structures can result in behaviour changes.

Turner and colleagues describe a multi-modal treatment designed to target traumatogenic themes as well as other components of the complex traumatic legacy of incest. Incest survivors often have disturbances in the capacity to form a trusting working alliance with therapists and clinicians need to pay considerable attention to providing a safe, respectful yet non-avoidant and meaningful therapeutic relationship. As pointed out by Turner and her colleagues, a more comprehensive treatment package, casting a wider net over a longer period of time, is indicated when treating individuals who have been multiply traumatized across the lifespan. Unfortunately, the extant clinical outcome research in PTSD is not very helpful as a guide for those clinicians who work with such populations. The paper by Turner *et al.* represents a good 'first step' in the generation of an empirical literature that describes a clinical protocol for targeting the multiple problems and challenges that incest survivors and other multiply traumatized populations present.

### *The Effects of the Environment on the Manifestation of PTSD*

As discussed above, trauma, particularly interpersonal brutality and violence, can profoundly disrupt interpersonal functioning. However, to date, researchers have virtually ignored aspects of PTSD patients' environment that may influence the manifestation of symptoms and problems. Tarrier in his paper suggests that the PTSD field would do well to consider the environments in which PTSD patients find themselves. He proposes the conceptual model of expressed-emotion as one method of examining how traumatized individuals' social environment impacts his/her adaptation following a traumatic experience. For example, some traumatized individuals have a difficult time being clear about what they need from significant others which creates ambiguity and uncertainty in family or social systems. In order to reduce this anxiety and tension, significant others may become demanding in ways that are counter-productive and lead the identified patient to shut-down and avoid contact, leading to a vicious cycle. Clinical researchers would do well to apply a systems approach in order to examine the complex interactive effects of trauma on the family and other social networks.

Tarrier's adaptation of the construct of expressed-emotion to the study of PTSD presents one such

'systems' approach that allows for the empirical examination of the influence of the environment on traumatized individuals. This type of work will help to determine the dimensions of interpersonal interaction that impede and facilitate recovery from traumatic exposure which will have important implications for the interpersonal context of therapy. Treatments may also need specifically to teach PTSD patients to communicate clearly about what they need from those around them and significant others may need to be educated in how trauma can affect interpersonal relationships.

## SUMMARY

Unfortunately, psychological trauma is widespread and its toll is pervasive and profound. For some, the psychological legacy of trauma is lasting and interferes with many areas of functioning (interpersonal, vocational, physical health). The specific effects of trauma are varied and the treatment of PTSD and related problems requires not only knowledge and skill but considerable flexibility in approach. We have attempted to provide the reader with a sense of the real-world clinical challenges that PTSD patients present with as well as a survey of important topics in the area of traumatic stress and chronic PTSD. We hope that the information provided in this paper and the papers that follow will be useful and challenging to those currently working in the area of PTSD. We also hope that these papers will stimulate interest in, and awareness of, the effects of trauma for those professionals who work in other clinical areas where trauma is likely to colour the treatment process.

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